

AMENDMENTS TO THE CLAIMS

Claims 1-9 and 17-21, 26-28 and 33 are provisionally withdrawn with traverse and are cancelled to avoid excess fees [18 claims cancelled]. Claims 34, 35, 36, 37, 38, 39, 40 were previously added, and Claims 41 – 44 are added herein [25 claims now presented]. Therefore the number of Claims is not increased in this Amendment.

Claims 1-9 are provisionally withdrawn and are cancelled to avoid excess fees.

Claims 1-9: Cancelled

Original Claims 10-16 are elected:

10. [Currently Amended] A method for separating compounds comprising the step of:

contacting a solution mixture comprising cell lysate or enzyme and a DNA and/or RNA target compound including DNA and/or or RNA, which comprise includes at least four a non-shielded purine or pyrimidine moieties moiety, and other compounds, including a shielded purine or pyrimidine moiety with a solid composition including immobilized metal atoms and/or ions capable of binding compounds containing a non-shielded purine or pyrimidine moiety, to form a supernatant liquid product containing having a reduced amount of compounds the DNA or RNA compound which includes at least four including a non-shielded purine or pyrimidine moieties moiety; and collecting the target compound.

11. [Original] The method of claim 10, further comprising the step of: separating the supernatant liquid from the solid composition.

12. [Currently Amended] A method for separating compounds comprising the steps of:

passing a solution comprising a mixture of compounds including target DNA and/or RNA compounds, comprising and a at least four non-shielded purine moieties moiety, a at least four non-shielded pyrimidine moieties moiety or mixture thereof through a column including an IMAC ligand, where the ligand is capable of differentially binding the compounds; and

collecting purified samples of the target DNA and/or RNA compounds, each compound.

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10. [Currently Amended] A method for purifying a lysate or enzyme product comprising a crude DNA and/or or RNA target compound containing a at least four non-shielded purine and/or pyrimidine moiety base moieties, said method comprising the steps of:

- forming a crude mixture comprising a target compound and contaminants;
- contacting the crude mixture with an agent including an IMAC ligand capable of binding to the target compound to form an IMAC ligand complex;
- separating the complex from the contaminants; and
- recovering the target compound from the complex.

Claims 17-21 are provisionally withdrawn and cancelled to avoid excess fees:

Claims 17-21: Cancelled

22. [Currently Amended] A method according to Claim [21] 35

further comprising the steps of:

separating the supernatant liquid from the solid composition; or further comprising the steps of:

separating the supernatant liquid from the solid composition and

eluting the compounds including a non-shielded purine or pyrimidine moiety from the solid composition.

23. [Currently Amended] A method for separating compounds comprising the step of:

contacting a ~~solution~~ mixture comprising cell lysate or enzyme and a target compound ~~compounds~~ including DNA, RNA, or both DNA and RNA, ~~DNA and/or RNA,~~ a non-shielded purine or pyrimidine moiety and a compound ~~compounds~~ including a shielded purine or pyrimidine moiety with a solid composition including immobilized metal atoms ~~and/or~~ ions capable of binding compounds containing a non-shielded purine or pyrimidine moiety to form a supernatant liquid having a reduced amount of compounds including a non-shielded purine or pyrimidine moiety;

wherein the compound ~~compounds~~ including a non-shielded purine or pyrimidine moiety comprises ~~comprise~~ a single stranded nucleic acid oligomer, or a single stranded nucleic acid polymer and the compounds including a shielded purine or pyrimidine moiety comprise double stranded nucleic acid oligomers or double stranded nucleic acid polymers;

wherein the supernatant liquid comprises compounds including DNA and/or RNA, and ~~a shielded purine or pyrimidine moiety~~ having contains less than or equal to 5% by weight compounds including a non-shielded purine or pyrimidine moiety.

24. [Currently Amended] A method of Claim 22 wherein the supernatant liquid comprises compounds including a shielded purine or pyrimidine moiety having less than or equal to 1% by weight of compounds which include ~~including~~ a non-shielded purine or pyrimidine moiety.

25. [Currently Amended] A method of Claim 22 wherein the supernatant liquid comprises compounds including a shielded purine or pyrimidine moiety having less than or equal to 0.01% by weight compounds which include ~~including~~ a non-shielded purine or pyrimidine moiety.

Claims 26-28 are provisionally withdrawn and cancelled to avoid excess fees:

26. Cancelled

27. [Cancelled]

28. [Cancelled]

29. [Currently Amended] A method of Claim ~~27~~ 23 wherein the ~~mixture of compounds~~ comprises poly(A) tailed mRNA sequences and other mRNA sequences from eukaryotic cells, the poly(a) mRNA sequences elute after the other mRNA sequences; or wherein the mixture ~~for~~ of compounds comprises denatured nucleic acid sequences, wherein ~~where~~ sequences having A₂-rich regions elute after sequences having T-rich regions; so that complementary strands can be resolved.

30. [Currently Amended] A method of Claim ~~27~~ 23 wherein the solution ~~mixture of~~ compounds comprises denatured nucleic acid sequences, wherein ~~where~~ sequences having C-rich regions elute after sequences having G-rich regions so that complementary strands can be resolved;

or wherein the mixture of compounds comprises denatured or partially denatured nucleic acid sequences having A-C, A-G, A-C-G, T-G, T-C and or T-G-C rich regions wherein ~~so that~~ the sequences having the ~~three~~ A-C, A-G, and/or A-C-G rich regions elute after their

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complementary sequences having T-G, T-C and or T-G-C rich regions resulting in a resolution of complementary sequences.

31. [Currently Amended] A method for purifying food stuffs containing purine and/or pyrimidine moieties comprising the steps of:

forming a crude liquid food stuff comprising cellular constituents including digestable proteins and nucleic acid contaminants including a non-shielded purine moiety, a non-shielded pyrimidine moiety or mixture thereof;

contacting the food stuff with substrate comprising an IMAC ligand, where the substrate binds the nucleic acid contaminants; and

removing the substrate comprising the IMAC ligand having bound thereto the nucleic acid contaminants to form a purified food stuff; and optionally further comprising the step of treating the crude food stuff with a DNase, endo or exo nuclease or other nucleic acid digestion enzyme or agent prior to the contacting step.

32. [Currently Amended] A method for purifying a crude target compound containing a non-shielded purine and/or pyrimidine moiety from a mixture comprising cell lysate or enzyme and a DNA or RNA compound containing DNA and/or RNA, which comprise compounds with ~~and without~~ a at least four non-shielded purine and/or pyrimidine moieties moiety, comprising the steps of:

forming a crude mixture comprising a target compound and contaminants;

contacting the crude mixture with an agent including an IMAC ligand capable of binding to the target compound to form an IMAC ligand complex;

separating the complex from the contaminants; and

recovering the target compound from the complex.

33. [Cancelled]

34. [Currently Amended] The method of claim 10 wherein the ~~molecule~~-target compound containing a at least four non-shielded purine or pyrimidine moieties, moiety is selected from
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the group consisting of ~~among~~ single-stranded DNA, partially single-stranded DNA, denatured DNA, fragmented DNA or RNA, plasmid DNA containing single-stranded regions, incomplete or imperfect PCR products, chain-terminated polymerase products, restriction endonuclease-digested DNA, single-stranded PNA, single-stranded primer, single stranded RNA, polyA mRNA and ~~and/or~~ messenger RNA, and is removed from compounds that do not contain a non-shielded purine or pyrimidine moiety ~~or group such as genomic DNA, double stranded plasmid DNA, double stranded PCR product, double stranded hybrid, or double stranded PNA.~~

35. [Currently Amended] A method for separating compounds comprising the step of: contacting a solution mixture comprising cell lysate or enzyme comprising double-stranded DNA and additionally comprising RNA and/or DNA; ~~the RNA and/or DNA containing~~ which contains single-stranded portions having a non-shielded purine or pyrimidine moiety, with a solid composition ~~including~~ comprising immobilized metal ions capable of binding compounds having a non-shielded purine or pyrimidine moiety, to form a supernatant liquid having a reduced amount of RNA and/or DNA having single-stranded portions.

36. [Currently Amended] A method for separating compounds comprising the steps of:
passing a solution ~~comprising~~ comprising
at least one RNA and/or or DNA compound, the RNA ~~and/or or~~ or DNA compound containing single-stranded portions having at least four ~~a~~ non-shielded purine or pyrimidine ~~moiety~~ moieties through a column including an IMAC ligand, where the ligand is capable of differentially binding the DNA and/or RNA compounds; and collecting purified samples of each DNA and/or RNA compound.

37. [Previously Presented] The method of claim 36, further comprising the step of:
detecting each compound in an effluent from the column as a function of time from at least one detectable property associated with each compound; and
determining the identity of each compound from the detected properties.

Add New Claims 38 – 43:

38. [New] A method according to Claim 34 wherein the target compound is separated from a compound selected from the group consisting of genomic DNA, double-stranded plasmid DNA, double-stranded PCR product, double-stranded hybrid and double-stranded PNA.

39. [New] The method of claim 36, further comprising the step of:

detecting each compound in an effluent from the column as a function of time from at least one detectable property associated with each compound.

40. [New] The method of Claim 32 wherein the contacting of the crude mixture with the agent including an IMAC ligand capable of binding to the target compound to form an IMAC ligand complex is performed in batch mode.

41. [New] The method of Claim 32 wherein the target compound comprises RNA having at least four non-shielded purine and/or pyrimidine moieties and is separated from a lysate containing double-stranded DNA.

42. [New] The method of Claim 32 wherein the target compound recovered from the complex is present in the original mixture at a concentration of less than 1 micromolar.

43. [New] The method of Claim 32 wherein the contacting of the crude mixture with the agent including an IMAC ligand capable of binding to the target compound to form an IMAC ligand complex is performed in batch mode, and the target compound recovered from the complex is present in the original mixture at a concentration of less than 1 micromolar.

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